DBMS Lab Experiment 03

Use of different SQL clauses and JOIN

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- **Batch:** 66
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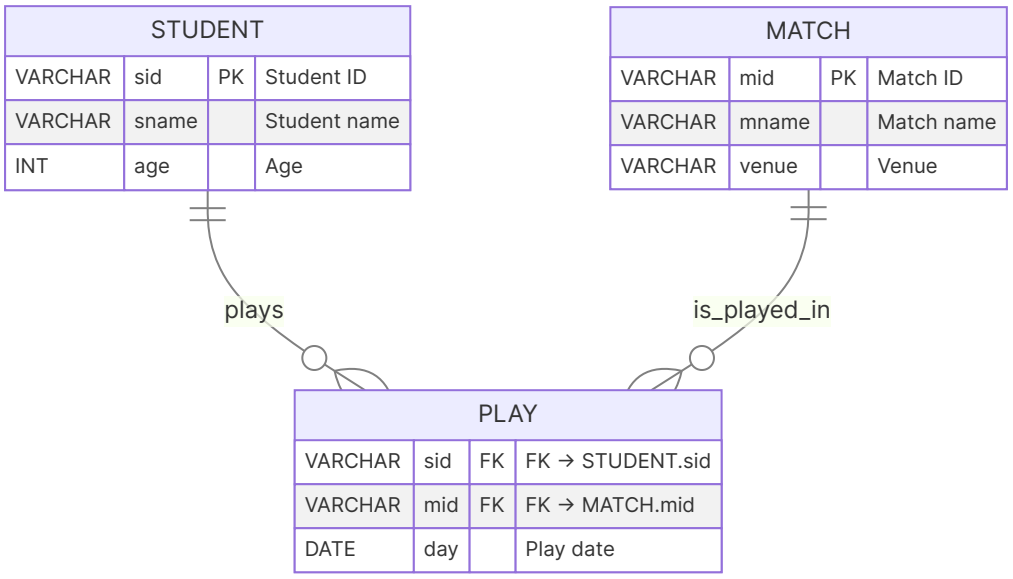
ER Diagram



ER → Relational Mapping

Relations:

1. STUDENT (sid, sname, age)
2. MATCH (mid, mname, venue)
3. PLAY (sid, mid, day)

Notes: Primary keys are underlined. Foreign keys: PLAY. Sid → STUDENT. Sid, PLAY. Mid → MATCH. Mid.

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1. Table Creation

Creating STUDENT Table

```
CREATE TABLE STUDENT (
    sid VARCHAR(10) PRIMARY KEY,
    sname VARCHAR(50) NOT NULL,
    age INT
);
```

Creating MATCH Table

(If your RDBMS treats MATCH as reserved, rename to MATCHES or quote it.)

```
CREATE TABLE "MATCH" (
    mid VARCHAR(10) PRIMARY KEY,
    mname VARCHAR(100) NOT NULL,
    venue VARCHAR(50) NOT NULL
);
```

Creating PLAY Table

```
CREATE TABLE PLAY (
    sid VARCHAR(10) NOT NULL,
    mid VARCHAR(10) NOT NULL,
    day DATE NOT NULL,
    PRIMARY KEY (sid, mid, day),
    FOREIGN KEY (sid) REFERENCES STUDENT(sid),
    FOREIGN KEY (mid) REFERENCES "MATCH"(mid)
);
```

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2. Inserting Sample Data

Data for STUDENT

```sql
INSERT INTO STUDENT (sid, sname, age) VALUES
('S001', 'Amit', 20),
('S002', 'Ria', 21),
('S003', 'Raj', 19),
('S004', 'Simran', 22),
('S005', 'Priya', 20),
('S006', 'Mohan', 23);
```

Data for MATCH

```sql
INSERT INTO "MATCH" (mid, mname, venue) VALUES
('B10', 'Battle10', 'Delhi'),
('M20', 'MumbaiMasters', 'Mumbai'),
('C30', 'CityCup', 'Kolkata'),
('D40', 'DoubleDay', 'Delhi');
```

Data for PLAY

```sql
INSERT INTO PLAY (sid, mid, day) VALUES
-- Amit plays B10 and M20 (different days)
('S001', 'B10', '2025-10-01'),
('S001', 'M20', '2025-10-02'),

-- Ria plays two matches on the same day (for GROUP BY / HAVING)
('S002', 'M20', '2025-09-15'),
('S002', 'B10', '2025-09-15'),
('S002', 'C30', '2025-10-03'),

-- Raj plays one match
('S003', 'C30', '2025-10-01'),

-- Simran plays a match in Delhi
('S004', 'D40', '2025-09-15'),

-- Mohan plays two matches on same day + one other
('S006', 'M20', '2025-11-01'),
('S006', 'D40', '2025-11-01'),
('S006', 'B10', '2025-10-05');
```

3. Exercise on Retrieving Records (Queries 3–9)

Q 3: Find all information of students who have played match number B 10

```sql
SELECT s.*
FROM STUDENT s
JOIN PLAY p ON s.sid = p.sid
WHERE p.mid = 'B10';
```

Result (example)

sid	sname	age
S 001	Amit	20
S 002	Ria	21
S 006	Mohan	23

Q 4: Find the name of matches played by Amit

```sql
SELECT DISTINCT m.mname
FROM "MATCH" m
JOIN PLAY p ON m.mid = p.mid
JOIN STUDENT s ON s.sid = p.sid
WHERE s.sname = 'Amit';
```

Result

mname
Battle 10
MumbaiMasters

Q 5: Find the names of students who have played a match in Delhi

```sql
SELECT DISTINCT s.sname
FROM STUDENT s
JOIN PLAY p ON s.sid = p.sid
JOIN "MATCH" m ON p.mid = m.mid
WHERE m.venue = 'Delhi';
```

Result

sname
Amit
Ria
Simran
Mohan

Q 6: The names of students who have played at least one match

Option A (JOIN + DISTINCT):

```sql
SELECT DISTINCT s.sname
FROM STUDENT s
JOIN PLAY p ON s.sid = p.sid;
```

Option B (GROUP BY + HAVING):

```sql
SELECT s.sname
FROM STUDENT s
JOIN PLAY p ON s.sid = p.sid
GROUP BY s.sid, s.sname
HAVING COUNT(*) >= 1;
```

Result

sname
Amit
Ria

sname
Raj
Simran
Mohan

(Priya S 005 is excluded — no plays.)

Q 7: Find ids and names of students who have played two different matches on the same day

```
SELECT s.sid, s.sname, p.day
FROM STUDENT s
JOIN PLAY p ON s.sid = p.sid
GROUP BY s.sid, s.sname, p.day
HAVING COUNT(DISTINCT p.mid) >= 2;
```

Result

sid	sname	day
S 002	Ria	2025-09-15
S 006	Mohan	2025-11-01

Q 8: Find ids of students who have played a match in Delhi or Mumbai

```
SELECT DISTINCT s.sid
FROM STUDENT s
JOIN PLAY p ON s.sid = p.sid
JOIN "MATCH" m ON p.mid = m.mid
WHERE m.venue IN ('Delhi', 'Mumbai');
```

Result

sid
S 001
S 002
S 004
S 006

Q 9: Find the average age of students

Average age across all students:

```
SELECT AVG(age) AS average_age FROM STUDENT;
```

Average age of students who have played at least one match:

```
SELECT AVG(s.age) AS avg_age_players
FROM STUDENT s
WHERE s.sid IN (SELECT DISTINCT sid FROM PLAY);
```

Result (based on sample data 20,21,19,22,20,23)

average_age
20.8333333333

avg_age_players
21.0

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4. Additional Operations (optional)

Update: Change Amit's age to 21

```
UPDATE STUDENT SET age = 21 WHERE sname = 'Amit';
```

Delete: Remove plays of Priya (if any)

```sql
DELETE FROM PLAY WHERE sid = 'S005';
```

Alter: Add email column to STUDENT

```sql
ALTER TABLE STUDENT ADD COLUMN email VARCHAR(100);
```
